

Claims

1. A wireless communication terminal comprising a voltage controlled oscillator comprising:
5 an active device for producing a power gain;
a first variable capacitance, operably coupled to the active device, providing a variable capacitance value based on a voltage applied on a steering line; and
a feedback network comprising a resonator, operably coupled to an output
10 of the active device, for feeding power back to an input of the active device to sustain oscillations;
and wherein the voltage controlled oscillator further includes a second variable capacitance which is operably coupled to receive a control voltage from the steering line and is located between the resonator and the active device.
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2. The wireless communication terminal according to Claim 1, wherein the active device comprises a transistor.
3. The wireless communication terminal according to Claim 2, wherein the
20 transistor has a base electrode and the second variable capacitance is connected between the resonator and the base electrode of the transistor.
4. The wireless communication terminal according to Claim 1, wherein the second variable capacitance is operably configured such that, when a high tuning
25 voltage is applied, a loaded-Q value of the voltage controlled oscillator is increased.
5. The wireless communication terminal according to Claim 1, wherein the second variable capacitance is operably configured such that, when a low tuning voltage is applied, a gain margin of the voltage controlled oscillator is increased to a
30 level sufficient to provide oscillations.

6. The wireless communication terminal according to Claim 1, wherein the second variable capacitance provides a capacitance in a range of about 12pF to about 3pF.
- 5 7. The wireless communication terminal according to claim 1, wherein in operation there is applied alternatively to the steering line a low tuning voltage in a range of about 0V to about 2.5V and a high tuning voltage in a range of about 2.5V to about 4.5V.
- 10 8 The wireless communication terminal according to Claim 1, further comprising an inductor located on the steering line between the second variable capacitance and a digital-to-analogue converter, such that an independent voltage can be applied from the digital-to-analogue converter to the second variable capacitance.
- 15 9. The wireless communication terminal according to Claim 1, wherein the voltage controlled oscillator comprises a Colpitts configured voltage controlled oscillator.
10. The wireless communication terminal according to Claim 1, wherein the
20 wireless communication terminal is operable according to operational standards selected from TETRA and GSM standards and is capable of generating radio frequency signals across two distinct operational frequency bands.
11. The wireless communication terminal according to Claim 1, wherein the
25 wireless communication terminal comprises a device selected from a portable radio, a mobile radio, a mobile telephone, a personal digital assistant and a wireless capable laptop computer.

12. A voltage controlled oscillator circuit suitable for use in a wireless communication terminal, the voltage controlled oscillator circuit comprising:
- an active device for producing a power gain;
 - a first variable capacitance operably coupled to the active device and
 - 5 providing a variable capacitance value based on an applied steering line control voltage; and
 - a feedback network comprising a resonator, operably coupled to an output of the active device, for feeding power back to an input of the active device to sustain oscillations;
 - 10 and a second variable capacitance operably coupled to receive a control voltage from the steering line and located between the resonator and the active device.